Editorial

Historical Perspective of Diarrheal Illness

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Before the inception of the antibiotic era, infectious disease was the number one killer of mankind. Although non communicable disease has gained the top spot ever since, millions of people have succumbed to their death by acute diarrhoeal illness till date. The horrific tale of cholera pandemic may have gone down the memory lane but the wave of diarrhoeal disaster is still something to be battled every year, even in this age of medical marvel. In the continuum of diarrhoeal disease saga, if someone tries to pick any single event that had the most impact, it must point towards the invention and implementation of oral rehydration solution. The tiny little pack of salt that we are so familiar with now and perhaps take it as granted was not always around the corner. The horror of diarrhoea realted death toll was finally manageable by the introduction of this seemingly simple yet elegant scientific discovery.

If we look into the history leading to the advent of modern treatment of diarrhea, we will notice that, for centuries human had no clue regarding the cause of diahhroea. So, like any other illness, people tend to attach meaning to meaningless phenomena. For example, parents started to see a pattern of diarrhoea with weaning of babies or during teeth eruption. So, they thought those were the factors behind the disease. Another prevailing hypothesis was diarrhoea is a weather related disease. This can be epitomised by the naming 'summer diarrhea' and 'winter vomiting disease' which were believed to be brought on by hot & cold weather respectively.[1,2] It was not until the 16th Century that we could shift our focus from these theories to diet. A century later the concept of flies contaminating food started to gain root. In the 19th century scientists started to wonder about the role of organisms behind diarrheal illness. Soon, one after another reports of discoveries of different microbes in diarrhea patients started to pour in and the infectious nature of the disease was established.

War and diarrhea!

The history of mankind is pretty much intertwined with warfare. Historically speaking, Diarrhea was proved to be one of the decisive factors in many wars. To put things into perspective, during the infamous war led by Napoleon, more people had died from diarrhea than the military campaign! Same is true for many more battles like the Crimian war.[3] Things were so out of hand that, during the US Civil war, a slogan emerged that said "No Gut, No Glory" depicting the value of a healthy gut to become an effective military personnel. They even had a code of not shooting a man attending the loo![4] Father of modern Medicine William Osler had righly said 'Dysentry has been more fatal to armies than powder and shot'.[5]

Earlier management

Diarrhea was seen as a protective response of the body against the obnoxious substances and cleansing the gut was considered the core management. To purge the gut, several objects like aromatic chalk powder, bismuth, castor oil etc. were commonly used.[6] Moreover; patients were encouraged to drink plenty of plain water to replenish the lost volume. Use of opium was also commonplace but was later on out of favour because of its addictive nature.

Discovering oral rehydration solution (ORS)

At the core of mistreatment of diarroeal illness was our lack of understanding of electrolyte loss. In 1940 Dr. Daniel Darrow of Yale university first

drew the attention of the scientific community regarding the importance of electrolyte in diarrhea in light of his seminal research and started advocating replacement fluid containing sodium, potassium and glucose.[7] In 1962, a United States Army Captain Phillips first applied glucose-salt solution to cholera patients amidst an outbreak in Philipines and was astonished to find out the efficacy.[8] Inspired by his result, scientists of Cholera Research Laboratory, Dhaka, and the Infectious Diseases Hospital, Calcutta, had further refined the process. Indian scientist Dr. Dilip Mahalanabis had used ORS in cholera cases among Bangladeshi refugees during 1971 liberation war and the result was very promising. Finally, after all these convincing scientific evidences supporting the efficacy of ORS, World Health Organization launched the global diarrheal diseases control program in 1978 where ORS was the key component. Since then, childhood mortality from diarrhoral disease has drastically fallen from 5 million to 1.3 million deaths annually. In Bangladesh, the renouned non Government organizatiion BRAC collaborated with ICDDRB to train rural mothers on how to make ORT using household component. They have trained an estimated 12 million mothers since 1980 that had helped to cut down childhood mortality tremendously.

Newer formulation

The initially formulated World Health Organization oral rehydration solution (WHO-ORS) was launched for cholera treatment, and later on proved to be effective irrespective of cause of diarrhea or age of the patient.[9] However, that formulation is not capable of significantly decreasing either stool volume or the duration of diarrhea episodes.[10] So, WHO kept working on finding out an improved ORS for enhancing treatment. Finally, after conducting many trials with different patient population and vatied concentration, WHO came up with the modified "Reduced Osmolarity" ORS formulation that was proven to reduce stool output, episodes of vomiting and the need for intravenous hydration. Moreover, the need for unscheduled intravenous therapy in children was also dropped by 33%.

Conclusion

Diarrhea is one of the deadliest diseases worldwide, specially for under five years children. ORS is credited to have saved an estimated 50 million lives since its discovery. In 1978 the highly prestigious medical journal "Lancet" had opined that, ORS is potentially the most important medical advance of the 20th century! One of the greatest benificiary of this mervalous mix of fluid is Bangladesh. We should aim to prevent dirrahoea related death by promoting widespread awareness of its viciousness and its relatively simple remedy.

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