Acute Viral Gastroenteritis

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To Editor,
One of the leading causes of morbidity and mortality worldwide, particularly in children under the age of five in underdeveloped countries, is acute viral gastroenteritis. Around 75% to 90% of acute infantile gastroenteritis cases around the world are caused by viruses. The most common viral pathogens responsible for gastroenteritis are rotavirus, norovirus, adenovirus, sapovirus, torovirus, bocavirus, astrovirus, parechovirus, aichivirus, picobirnavirus, and cardiovirus. Before rotavirus vaccination became routine, it was the most common cause of infantile gastroenteritis. Nowadays, the most prevalent cause of acute viral gastroenteritis in children is norovirus. More than 200,000 children worldwide die from acute viral gastroenteritis every year, mostly in developing countries. Acute viral gastroenteritis outbreaks are most common in the winter. Most viruses are transmitted via the fecal-oral route through person-to-person contact and contaminated food and water.

Rotavirus has been used extensively in studies on the pathophysiology of viral gastroenteritis. Rotavirus mainly affects enterocytes of the small intestine, leading to the destruction of these cells, a decrease in the ability of the intestinal fluid to be absorbed, and secondary disaccharidase deficiency. Disaccharidase deficiency causes malabsorption of carbohydrates, resulting in osmotic diarrhea. Rotavirus infection destroys mature enterocytes. This causes a number of changes in the villus epithelium and a reduction in the digestive and absorptive functions of the intestine, resulting in malabsorption. Additionally, rotavirus nonstructural protein 4 (NSP4) functions as an enterotoxin that can increase intestinal fluid production. The incubation period typically lasts between 12 and 72 hours, depending on the viral agents. The primary clinical signs of acute viral gastroenteritis are vomiting and diarrhea, which are frequently accompanied by a fever, headache, nausea, and abdominal cramps. Interestingly, infants with norovirus or sapovirus gastroenteritis may experience vomiting without diarrhea. In the majority of viral gastroenteritis cases, vomiting is a prominent symptom. Viral virulence, virus load, host immune system, and coexisting conditions all influence the severity of the disease. Usually, diarrhea lasts less than seven days. If it persists for more than 14 days, it is referred to as protracted diarrhea.

Acute gastroenteritis is diagnosed clinically based on the occurrence of diarrhea and vomiting, fever, and abdominal pain. Routine etiological investigations of viral pathogens are not usually required but may be used for epidemiological purposes during epidemics. The most serious complication of viral gastroenteritis is dehydration, which results from a significant loss of fluids as well as important salts and minerals and, in its severe form, can result in coma, shock, and even death. Poorly nourished children are at higher risk. Severe dehydration can lead to shock and acute renal failure.

Personal hygiene (regular hand washing with soap, cautious diaper handling, safe preparation and storage of food and drinking water, and proper disinfection of contaminated items and surfaces) plays a critical role in preventing the spread of the virus. Breastfeeding is advised during the first year of life, and exclusive breastfeeding is suggested for the first 6 months. Breast milk lowers the risk of gastroenteritis and shortens the length of diarrhea. Studies have demonstrated that Rotavirus vaccination is successful in decreasing rotavirus-induced diarrhea and rotavirus-related hospitalizations and lowering the use of healthcare services and expenses associated with Rotavirus-induced diarrhea. A systematic study found that the rate of hospitalizations and emergency department visits due to rotavirus acute gastroenteritis decreased by 67% on average, and by 71%, 59%, and 60% in countries with low, medium, and high child mortality, respectively.

To drastically lower the incidence of rotavirus gastroenteritis and associated morbidity and death, universal vaccination of infants as early as 6 weeks of age and completion of the Rotavirus vaccine immunization schedule by 8 months of age are suggested. Additionally, several norovirus vaccines are presently undergoing
clinical trials with positive outcomes. The prevalence of viral gastroenteritis is anticipated to decrease further with the development of an efficient norovirus vaccine.

Acute viral gastroenteritis is an important contributor to morbidity in developed countries and a major cause of death in developing countries. In areas where the rotavirus vaccine is included in routine childhood immunization programs, norovirus has overtaken rotavirus to become the most common pathogen. In addition, observing personal hygiene and washing hands to prevent the transmission of pathogens to the mouth and vaccination are important in preventing gastroenteritis.

**Authors’ Contribution**

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**References**