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Editorial

A recapitulation of rotavirus and reinforcement of the need for vaccination

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In 1973, Ruth Bishop discovered Rotavirus[1], its clinical impacts and public health significance were vastly underrated especially in developed countries[2]. Rotavirus is a double-stranded Ribonucleic Acid (RNA) virus which belongs to the Reoviridae family[3]. So far 10 species (A-J) of this virus have been discovered amongst which Rotavirus A is the most common, that is associated with human infections[4]. Rotavirus diarrhea is a leading cause of under 5-year mortality in children. Several studies have attributed 440,000 deaths in children under 5 years of age[2,4&5].

The highest disease burden have been recorded in South Asian and Sub-Saharan Africa[6&7]. The hospitalized infants and children at day care centres and adults at nursing homes show greater susceptibility for Rotavirus associated diarrhea[8]. There have been several alarming and noticeable outbreaks which have occurred globally due to various strains of Rotavirus. Largest epidemic of diarrhea due to Rotavirus was recorded in Nicaragua in the year 2005[9]. The reason behind this outbreak was the mutations in the Rotavirus A genome[9]. Rotavirus B is responsible for outbreaks in India[10]. Till this date, epidemics caused by rotavirus B have been limited to Mainland, China[11].

World Health organization (WHO) guidelines state that Rotavirus illness should be treated with supportive therapy, which consists of oral rehydration solution (ORS) and in severe cases of dehydration the patient should be hospitalized and given intra-venous (IV) fluids[12].

An efficient way to handle the problem of Rotavirus would be to prevent the disease through vaccinations before the illness occurs on itself because the illness itself does not offer prolonged immunity against the disease. There are four oral, live, attenuated rotavirus vaccines which are available internationally and WHO prequalified[13]. All these vaccines have exhibited high effectiveness in preventing severe Rotavirus infection. According to WHO recommendation the 1st dose of Rotavirus vaccine along with DTP (diphtheria, tetanus toxoids and pertussis) vaccine must be administered soon after six weeks of age. The recommended schedule for Rotavirus vaccinations, RotaTeq (RV5), administered in 3 doses at 3, 4, and 6 months of age while Rotarix (RV1) is administered in 2 doses at 2 and 4 months of age[13].

The minimum vaccine dose interval for Rotavirus is 4 weeks; the first dose must be given in 6 weeks whereas the maximum dose interval is 14 weeks[14]. Vaccination for infants of 15 weeks or older is not suggested as there is a lack of data regarding the efficacy of the 1st dose in older infants while the last dose of the vaccine must be given maximum by 32 weeks of age[14]

Numerous measures have been proposed to diversify the impact and efficacy of Rotavirus vaccines in countries with the most disease burden. Ensuring a widespread availability and maintaining cost-effectiveness of the Rotavirus vaccine, studying adjuvants can increase the efficacy of vaccines and changes in immunization schedule for Rotavirus vaccinations.

Typically the Rotavirus vaccine schedule includes 3 doses of vaccines, however usually only 2 doses are given. A third dose can be safely added and does not increase the risk of intussusception[15].

In low-income countries, there were concerns regarding vaccine efficacy due to possible interference by simultaneous gastroenteric infections, higher levels of maternal antibodies in the infant's system, higher rates of malnutrition, improper follow-up and poor access to affordable health care. According to the WHO report, Rotavirus vaccines should be included in all the National Immunization Programmes and it must be promoted in countries of Southeast Asia and Sub-Saharan Africa[16]. Moreover, WHO newsfeed published in July 2018, 101 countries have introduced Rotavirus vaccines, and the global coverage was estimated to be around 35%[12]. The full effect and impact of Rotavirus vaccination are still to be entirely recognized in low-income countries especially in Asia and Africa.

This article signify the importance of inclusion of rotavirus vaccination in the immunization of developing countries. This intervention could significantly reduce the morbidity and mortality of this preventable illness, as evidenced by the reduced burden of this infection in developed nations.

Conflicts of Interest

None.

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