Letter to the Editor

Rotavirus infection in Iran and current vaccines against it

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Rotaviruses are non-enveloped viruses of the *Reoviridae* family which are worldwide leading cause of acute gastroenteritis (AGE) in under 5-year-old children [1]. Infection by rotaviruses is one of the major causes of childhood diarrhea with an associated high mortality rate (440,000 deaths/year) and is responsible for 25 million medical visits and 2 million hospitalizations every year, especially during the cold season [2-3]. The prevalence of rotavirus infections in Iran has been estimated as 30% -50% while the mean prevalence is reported to be 39.9% [4]. According to WHO report, in Iran 42% of gastroenteritis are caused by rotaviruses which is estimated to have inflicted approximately 2000 and 270 deaths in 2008 and 2013, respectively [5]. This pattern indicated that the rate of rotavirus-caused diarrhea for Iranian children is similar to the rate in Eastern Mediterranean region. The prevalence of rotavirus infection is varied in different regions of Iran. For instance, this rate is 6.3% for Birjand region (South Khorasan province) and 79.2% in Tehran [6].

It is very important to determine the circulating rotavirus strains for studies related to its classification, molecular epidemiology and vaccines. Based on the glycoprotein VP7(G) and the protease-cleaved protein VP4(P) types, rotaviruses have been classified into at least 27 G and 35 P genotypes [7]. Overall in Iran, G1P[8], G2P[4] and G4P[8] are accounted for more than 60% of all detected rotavirus strains while G1P[8] alone representing over 50% of all rotavirus infections. However, G1 genotype appears to decrease with emergence of G8P[NT], G9P[8], G9P[6], G12P[8] and G12P[6] as well as other novel genotypes. Emerging and uncommon genotypes such as G9P[8], G3P[8], G1P[4], G3P[9], G12P[8], G1P[10] and G8P[NT] have also been found in Iran which suggest a diversity of rotavirus genotypes in the infected Iranian children [8, 9].

It is well recognized that the impacts of rotavirus vaccines on severe rotavirus and all-cause diarrhea have been dramatic in all countries that have introduced the vaccines. The two multinational vaccines prequalified in 2006, namely ROTARIX and RotaTeq, are included in the national immunization programs or in phased subnational introductions in 95 countries across the globe [10]. HRV and HBRV have shown similar efficacy in the clinical trials and exhibit similar safety profiles in terms of risk of intussusception [11]. ROTAVAC (Bharat Biotech) contains naturally attenuated monovalent G9P [11] rotavirus and achieved WHO prequalification in January 2018, enabling the global use of this vaccine in other developing countries, supported by of Global Alliance for Vaccines and Immunization (Gavi) foundation [12]. All the approved rotavirus vaccines have high rate of efficacy and cause significant low rate of child hospitalization for severe illnesses; thus, implementation of a rotavirus vaccine to national immunization program in Iran with national strains and production merits consideration.

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