Correspondence

Occurrence of group B rotavirus infections in the outbreaks of acute gastroenteritis from western India

Sir,

Group B rotaviruses (GBRs) are known to infect humans and different species of animals1. Association of human GBRs as enteric pathogens was established in devastating epidemics of diarrhoea in China during 1982-19872,3. Other than China, GBR has been identified mainly in sporadic cases of diarrhoea in India, Bangladesh and Myanmar4-7. In an outbreak of gastroenteritis that occurred in Daman, Union territory of India in 2000, GBR infections were detected8. Thereafter, no reports of GBR in outbreak cases are documented either from India or from other parts of the world. We report here occurrence of mainly GBR infections in outbreaks of acute gastroenteritis (AGE) recognized in two different States of India in two different years.

In February 2004, Surat in Gujarat State encountered an outbreak of gastroenteritis. A total of 295 cases including 22 hospitalized and 273 visiting OPD of municipal corporation hospital, Muglisara, Surat were recorded. Three faecal specimens collected from hospitalized adults were received at National Institute of Virology, Pune. All three specimens were tested positive for GBR in RT-PCR of NSP2 gene carried out by the protocol described earlier9 and negative for group A rotavirus by antigen capture ELISA (Generic Assay, Germany). All three specimens also showed GBR specific RNA migration pattern (4-2-1-1-1-1) on polyacrylamide gel (data not shown). According to the information from health officials of the hospital, drinking water supplied in pipes was probably contaminated with sewage resulting in rampant AGE infections within a week in the inhabitants of about 14 localities.

An epidemic of gastroenteritis occurred in the summer months (April-May) of 2009 affecting two villages, Kalambi and Khanderajuri of Sangli district of Maharashtra was brought to the notice of investigating team by District Health Officer, Sangli. A total of 229 patients were reported from primary health centres of the respective villages. Preliminary tests carried out on a few water and faecal samples for bacteria in the public health laboratory of Sangli district was found to be negative. Faecal specimens (n=23) and rectal swabs (n=6) collected from a total of 29 (22 from Kalambi and 7 from Khanderajuri) cases who visited public health centres for the medical treatment were examined for identification of viral aetiological agents. GBR was detected in 5 (17.2%) (4 faecal and 1 rectal swab) specimens by RT-PCR performed using NSP2 gene specific primers9. No other enteric viruses (group A rotavirus, norovirus, enteric adenovirus, astrovirus and enterovirus) were detected in any of the specimens indicating only GBR as the major aetiologic agent associated with this outbreak. Investigation revealed that the villages were suffering from water shortage due to summer and that the wells in the villages were supplied with water from the regional water station through pipes which carried leakages. It is likely that the piped and well water used for drinking purpose by inhabitants was contaminated. Occurrence of multiple but scattered cases of gastroenteritis in the two villages in a short period was suggestive of well water as a common source of infection.

Sequencing and phylogenetic analysis of the partial NSP2 genes (434 bp) of all of the eight (3 from Surat and 5 from Sangli district) GBR strains showed their clustering with GBR strains from Indian-Bangladeshi lineage of genotype G2 with higher (98.3-100%) nucleotide identity as compared to those of the Chinese lineage (93.3-94.1%) (Fig.). Close genetic relationship with other strains (CAL-1, IDH-084, IC-008) of Indian origin suggested endemicity of such strains in different geographical regions of India.
GBR strains have known potential to perpetuate in the environment through sporadic/outbreak infections; however, they remain unidentified due to lack of easy and rapid diagnostic methods. While vaccine programme against group A rotavirus is being considered seriously, longitudinal surveillance of GBR in paediatric and adult cases of gastroenteritis would help determine their contribution to overall disease burden of diarrhoea in India.

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