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Norovirus Infection as a Cause of Diarrhea-associated Benign Infantile Seizures.

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BACKGROUND: Norovirus and rotavirus cause outbreaks of diarrheal disease worldwide. This prospective observational study was undertaken to investigate the clinical characteristics and complications, with a focus on convulsive disorders, of gastroenteritis caused by norovirus and rotavirus in hospitalized pediatric patients in northern Taiwan.

METHODS: Children hospitalized with acute gastroenteritis in Chang Gung Children's Hospital from August 2004 through January 2007 were enrolled in the study. Rotavirus and norovirus were detected by reverse-transcriptase polymerase chain reaction with fecal specimens and were genotyped by sequence analysis. The symptoms and complications, in particular convulsions, of acute gastroenteritis caused by rotavirus and norovirus were reviewed and compared. The occurrence of convulsions associated with norovirus infection was specifically analyzed and discussed. The neurological outcomes for all norovirus-infected patients with or without convulsions were followed up for 1 year.

RESULTS: Among the 353 patients with acute viral gastroenteritis without coinfection, rotavirus and norovirus isolates were detected in 101 patients (28.6%) and 64 patients (18.1%), respectively. We compared the symptoms between the 2 groups and found that rotavirus caused a higher frequency and longer duration of vomiting and a higher body temperature than did norovirus. Norovirus infection, on the other hand, caused significantly longer hospital stays (mean duration of stay [interquartile range], 6 [5-8] days vs. 5 [4-7] days; $P < .001$) and a significantly higher incidence of convulsions than did rotavirus infection (29.7% vs. 5%; $P < .001$). Three of the 19 patients with convulsions showed an abnormal record on electroencephalogram, but none had any neurological sequelae at the subsequent 1-year follow-up. The majority of norovirus strains (41 of the 56 genotypeable strains) belonged to genogroup GGII/4.

CONCLUSIONS: Norovirus is a major cause of acute gastroenteritis in children. This study identified norovirus as an emerging agent causing convulsive disorder in children, particularly in young infants. Long-term neurological sequelae are uncommon.

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