

Complicated Noroviral Infection and Assessment by a Modified Vesikari Disease Score System in Hospitalized Children

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Background/Objective

Norovirus (NoV) GII.4 is the most common genotype for noroviral gastroenteritis worldwide. New variants or subgenotypes are continuously emerging, thus posing a serious threat to child health.

Method

We compared the clinical manifestations and complications of noroviral gastroenteritis in children from April of 2004 through December of 2012. NoV variants were analyzed to investigate the association of circulating viral strains with the complications. A modified disease severity score system based on Vesikari score system was applied to evaluate disease severity.

Result

Compared to outbreak in 2004-2005, significant higher incidence of complications in the later periods are: in 2006-2007, convulsive disorder ($p < 0.001$); in 2008-2010, gastrointestinal hemorrhage ($p = 0.047$) and severe abdominal pain or irritability ($p = 0.033$); in 2011-2012, gastrointestinal hemorrhage ($p = 0.030$), severe abdominal pain or irritability ($p = 0.014$), and prominent hyperthermia (fever $>39^{\circ}\text{C}$ $p = 0.001$). GII.4 2006b, GII.4 2009, GII.4 Sydney 2012, and GII.4 2012b were the dominant strains in the outbreaks after 2006. By the modified score system, severe noroviral disease occurred in 28.5%, 32%, 33.3%, and 30.2% of the patients in the four periods. A longer duration of hospitalization ($p = 0.02$) were found in those with high score irrespective of the year of admission.

Conclusion

Our study demonstrated NoV outbreaks in northern Taiwan caused by different GII.4 variants that were associated with specific complications and uncommon clinical presentations. A modified severity score system first proposed in this study was able to identify severe cases with a longer hospital stay in NoV-infected children.