

Molecular Characterization and Genotyping of Human Adenovirus in Hospitalized Children with Sporadic Gastroenteritis in Shanghai, China, 2006-2011

Lijuan Lu^{1*}, Huaqing Zhong¹, Liyun Su¹, Lingfeng Cao¹, Menghua Xu¹, Niuniu Dong¹,
Zuoquan Dong¹, Jin Xu¹

¹Children's Hospital of Fudan University

Background/Objective

Human adenovirus (HAdV), is considered to be a significant enteropathogen in association with sporadic diarrhea in children, however, data was limited in Shanghai in recent years. To molecularly characterize the HAdV and describe their association with acute gastroenteritis in children in Shanghai.

Method

Fecal samples were collected from children by 5 years with acute diarrhea treated as inpatients from January 2006 to December 2011. The selected samples were subjected to reverse transcriptase PCR (RT-PCR) or PCR to detect and genotype rotavirus (RV), human calicivirus (HuCV), human astrovirus (HAstV) and HAdV and HAdV was genotyped directly by sequencing the PCR products and subsequent phylogenetic analysis.

Result

HAdV infections was detected in 4.7% (32/674) of the specimens with a downward trend from 2006 to 2011, 13.4%, 4.6%, 3.2%, 4.1%, 2.0% and 3.3%, respectively. The comprehensive detection of the four viruses showed that there was a high percentage (90.6%) of co-infection among the HAdV positive samples, and HAdV+RV was the most prevalent co-infection form in these combinations. Among the 32 HAdV positive samples, 50.0% (16/32) belonged to HAdV-41, followed by HAdV-3(25.0%, 8/32) and some other “non-enterovirus” pathogens such as HAdV-37. Besides, there were some differences of the popularity of HAdV genotypes each year. Our results clearly indicated that HAdV infections were most commonly observed in autumn and winter seasons from September to December and more than 70% of HAdV episodes were occurred in children by 12 months years old.

Conclusion

The results indicated clearly the diversity genotype of HAdV in inpatient children with diarrhea in Shanghai from 2006 to 2011 and it played a certain role in nosocomial infections. Mixed infection was the main form in children with HAdV related diarrhea, which may prompt that HAdV plays some role in diarrhea children in the form of co-infecting with other diarrhea viruses in most instances.