VIRAL GASTROINTESTINAL INFECTIONS ASSOCIATED WITH INTUSSUSCEPTION

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Background

Intussusception is the invagination of an intestine segment within a more distal one and it is the most common cause of bowel obstruction in children. Association with viral gastrointestinal infection is discussed in many years, but it is different from studies. In this study, we conducted multiplex PCR from stool specimens in patients with intussusception.

Objectives

To evaluate the relationship intussusception with viral gastrointestinal infection, we conducted viral testing on stool samples from patients with intussusception.

Methods

Stool samples were collected 1-2 days after air reduction in patients with intussusception from September 2013 to August 2017. Samples were tested for enteric adenovirus, norovirus GI, norovirus GII, rotavirus, astrovirus, sapovirus by multiplex polymerase chain reaction. The stool samples were tested using RIDASCREEN Rotavirus Antigen Test Kit (R-Biopharm, Darmstadt, Germany). RNA extraction from fecal suspensions for PCR and genotyping was performed using the QIAamp Viral RNA Mini Kit (Qiagen, Hilden, Germany) and QIAcube platform (Qiagen). Samples were analyzed for rotavirus by PCR using the commercially available Seeplex DV mRT-PCR Assay (Seegene, Seoul, South Korea) and a PTC-200 Thermal Cycler (Bio-Rad, Hercules, CA, USA)

Results

198 patients with intussusception were got air reduction. 153(77.2%) stool samples were tested multiplex PCR. 53 samples of 153 (34.6%) were positive results. Enteric adenovirus was detected in 32(60.4%) cases, norovirus GII in 12 (22.6%), norovirus GI in 6 (11.3%), astrovirus in 3 (5.6%), rotavirus in 3 (5.6%) cases. Coinfection of enteric adenovirus and norovirus GII in 3 cases was detected.

Fig. 1. Frequency of Viruses in The Specimens with Virus Isolated.

Table 1. Demographics and symptoms in Patients with Intussusception.

Characteristic or Condition	Intussusception (n=198)	PCR positive (n=53)	Enteric adenovirus (n=32)	Norovirus GII (n=12)	Norovirus GI (n=6)	Astrovirus (n=3)	Rotavirus (n=3)
Demographics							
Male sex	102	22	17	6	4	2	1
Age, y, mean	2.2	2.7	2.7	2.2	2.1	1.5	1.5
Daycare attendance	89	33	17	8	4	2	2
Symptoms							
High fever (>39°C)	35	15	8	4	2	0	1
Duration of fever	2.5	3.2	2.5	3.5	2.8	3.1	2.8
Vomiting	112	28	20	8	6	3	3
Blood stool	40	20	10	5	3	0	1
Diarrhea	9	7	5	4	3	2	2
Irritability	89	32	26	10	8	3	3

Fig. 1. Seasonal Distribution of Intussusception in Patients with Virus Isolated

Conclusions

Our results show that intussusception is associated with enteric adenovirus infections, and norovirus GII infections. We can not find the association of intussusception with rotavirus infection. We suggest that after vaccine era, rotavirus is no more origin of intussusception.