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Incidence of Cryptosporidium spp. and rotavirus gastroenteritis among children in Erbil

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Introduction

Watery diarrhea is the most common medical problem among infants and young children, caused by different microbial etiology including *Cryptosporidium* spp. and rotavirus, which are usually misdiagnosed in conventional stool test. This study aimed to investigate the incidence of *Cryptosporidium* and rotavirus gastroenteritis among children in Erbil as well as evaluate the efficacy of rotavirus vaccination procedure applied in Erbil.

Methods

Fecal specimens were collected from 400 children complaining from diarrhea (boys and girls), aged one month to five years old, who attended Raparin Pediatrics Hospital in Erbil, between January to August 2014.

Detection of *Cryptosporidium* spp

- Modified Ziehl Neelson technique (for detection of excreted oocysts).

- Nested PCR (18s rRNA)

primers

5'-TTCTAGAGCTAATACATGCG -3' (F)

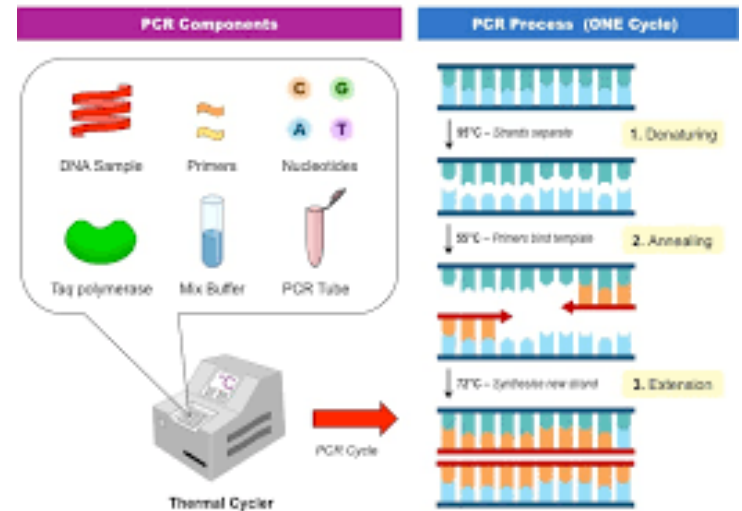
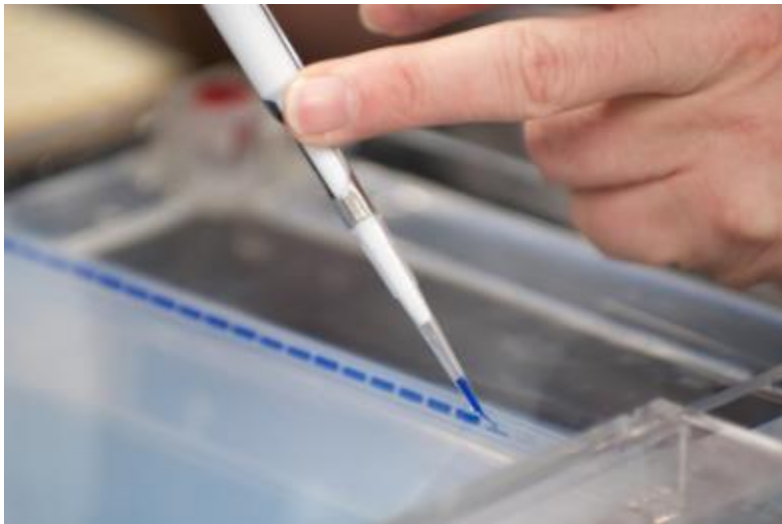
5'- CCCTAATCCTTCGAAACAGGA-3' (R)

5'-GGAAGGGTTGTATTTATTAGATAAAG-3' (F)

5'-AAGGAGTAAGGAACAACCTCCA-3' (R)

Qiagen stool mini kit
(Germany)

- Amplification protocol was consisted of 40 cycles of initial denaturation 30 seconds at 98°C, denaturation 10 seconds at 98°C.
- Annealing 30 seconds at 55°C, extension 30 seconds at 72°C.
- Final extension 10 minutes at 72°C.



Detection of Rota virus

CerTest (Biotec, Spain)

(<http://www.certest.es/wp-content/uploads/2014/10/EN-CerTest-Rotavirus1.pdf>)

CerTest
Biotec

**Rotavirus
Adenovirus
Card Test**

IVD CE

Test rapido immunocromatografico per la ricerca di Rotavirus e Adenovirus nelle feci

Raccolta e preparazione del campione



Esecuzione del test



Interpretazione del risultato

Semplice
Sensibile
Specifico



negativo
Rotavirus positivo
Adenovirus positivo
Rotavirus e Adenovirus positivi



Results

Table 1. Frequency of cryptosporidiosis and rotavirus infection according to residency

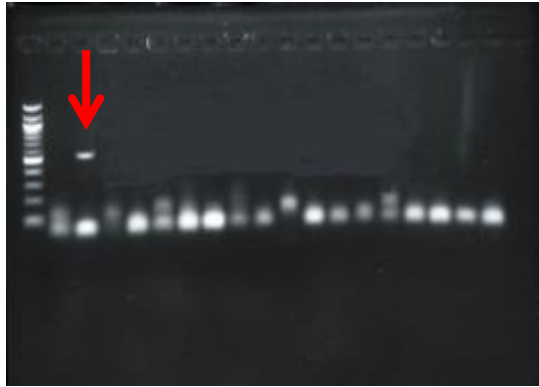
	Cryptosporidiosis			Rota virus infection		
	No. of examined samples	No. of Positive (%)		No. of examined samples	No. of Positive (%)	
Residency						
Urban	35	1 (2.8)	P > 0.05	295	102 (34.6)	P < 0.05
Rural	18	2 (8.6)		105	26 (24.7)	
Total	50	3 (6.0)		400	128 (32.0)	

Table 2. Gender, age and seasonal distribution of cryptosporidiosis and rotavirus infection

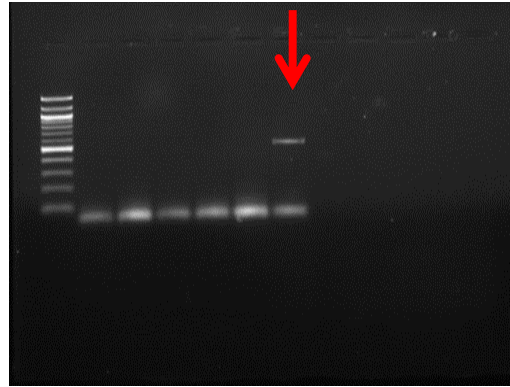
	Cryptosporidiosis			Rota virus infection		
	No. of examined samples	No. of Positive (%)		No. of examined samples	No. of Positive (%)	
Gender						
Male	32	2 (6.25)	P > 0.05	180	62 (34.4)	P > 0.05
Female	18	1 (5.55)		220	66 (30.0)	
Total	50	3 (6.0)		400	128 (32.0)	
Age group						
≤ 2 year	17	2 (11.7)	P > 0.05	109	34 (31.1)	P < 0.05
2-3 year	22	1 (4.54)		193	76 (39.3)	
3-5 year	11	0		98	18 (18.3)	
Total	50	3 (6.0)		400	128 (32.0)	
Season						
January and February	10	0	P > 0.05	168	65 (38.6)	P < 0.01
March and April	21	2 (9.52)		140	51 (36.4)	
May and June	19	1 (5.26)		92	12 (13.0)	
Total	50	3 (6.0)		400	128 (32.0)	

Table 3. Incidence change of rotavirus Gastroenteritis among 400 children in response to vaccination

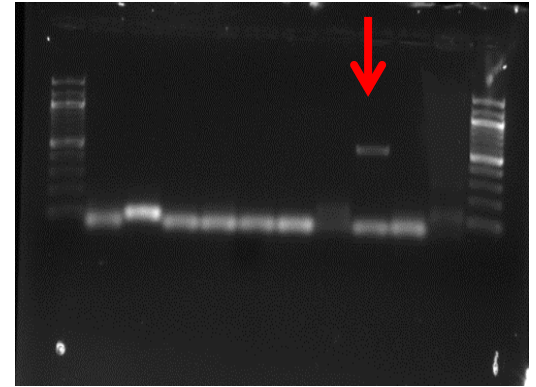
Vaccination status	No. of samples	No. of positive (%)	
One vaccine	43	26 (60.4)	P < 0.01
Two vaccine	67	37 (55.2)	
Three vaccine	152	37 (24.3)	
Total vaccinated	262	100 (38.2)	P < 0.01
Non-vaccinated	138	91 (65.9)	



A



B



C

Figure 1. A, B, C, show the results of nested second round PCR using outer primers 5'-TTCTAGAGCTAATACATGCG 3'(F), 5'CCCTAATCCTTCGAAACAGGA-3' (R) and inner primers 5'-GGAAGGGTTGTATTTATTAGATAAAG - 3' (F), and 5'-AAGGAGTAAGGAACAACCTCCA-3' (R). Three positive bands (1, 2, 3) were detected at 550 bp region. L: 100 bp DNA ladder.

Conclusion

The incidence of cryptosporidiosis is declining. However, rotavirus gastroenteritis is relatively high among young children in Erbil, and rotateq vaccine significantly reduces the incidence of this later infection.

Thank you for your attention

