

Acquisition of diarrhoeagenic bacteria, parasites and viruses during travel: a pilot study in a prospective cohort of healthy travellers

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Introduction

Diarrhoea is a frequently occurring travel associated condition. No prospective data are available on the acquisition of viral, bacterial and parasitic diarrhoeagenic agents by healthy individuals during travel. Besides the epidemiological relevance, such data may help to understand the clinical relevance of detected pathogens in the era of extremely sensitive diagnostic tests such as real-time PCR (qPCR).

Objectives

To determine the frequency of travel associated acquisition of 17 enteropathogens in healthy adults and the association of acquisition with abdominal complaints like travellers' diarrhoea (TD).

Methods

The COMBAT-study is a multicenter longitudinal cohort study, following 2,001 healthy Dutch adults who travelled abroad for 1-12 weeks. In this pilot study in 98 randomly selected travellers, qPCR was used to detect 8 viral pathogens, 6 bacterial enteric pathogens and 3 parasite species in faecal samples collected immediately before and after travel. Acquisition rates were calculated for travellers with a negative pre-travel test (see table). TD was defined as at least one day three or more stools and any loose or liquid stool during travel.

Results

The median age was 48 years (range 19-75) and 52% was female. Mean travel duration was 22 (7-72) days. Most frequently visited sub-regions were South-Eastern Asia (n=30), South America (n=13) and Eastern Africa (n=10). Thirty-five percent of travellers (34/98) reported TD. These distributions in this pilot study were similar to the distributions for the entire cohort, except for destination Southern Asia, which was significantly underrepresented. Results of *Dientamoeba fragilis* detection were inconclusive in 3 pre and 3 post-travel samples due to PCR inhibition.

Pre-travel carriage rates for *Blastocystis* spp. and *Dientamoeba fragilis* were 32% and 17% respectively. Pre-travel prevalences of all other tested pathogens were below 3%.

Table: Acquisition rates of diarrhoeagenic bacteria, parasites and viruses.

<i>Salmonella</i> spp.	<i>Shigella</i> spp.	<i>Yersinia enterocolitica</i>	<i>Campylobacter</i> spp.	<i>Plesiomonas shigelloides</i>	<i>Clostridium difficile</i>	<i>Dientamoeba fragilis</i>	<i>Giardia lamblia</i>	<i>Blastocystis</i> spp.
3/98 (3%)	5/98 (5%)	2/98 (2%)	4/98 (4%)	7/98 (7%)	1/98 (1%)	2/76 (3%)	1/98 (1%)	7/67 (10%)
Rotavirus (A, C)	Adenovirus (40, 41, 52)	Norovirus	Astrovirus	Sapovirus	Enterovirus	Parechovirus	Hepatitis E virus	
- (0%)	- (0%)	- (0%)	2/98 (2%)	- (0%)	1/98 (1%)	2/98 (2%)	- (0%)	

The association between acquisition and abdominal complaints such as TD is currently investigated.

Conclusion

This pilot study shows that *Dientamoeba fragilis* (17%) and *Blastocystis* spp. (31%) are highly prevalent in faecal samples of healthy individuals in the Netherlands, before travel. Acquisition of enteric viruses and hepatitis E virus by healthy travellers is rare. *Blastocystis* spp. (10%), *Plesiomonas shigelloides* (7%) and *Shigella* spp. (5%) were the most frequently acquired pathogens.