

TITLE: Acquisition of intestinal colonization with extended spectrum beta-lactamase producing *Escherichia coli* after international trips by the public attending a travel clinic in Rio de Janeiro

AUTHORS: TUFIC, S. S.; LONGO, L. G. A.; OLIVEIRA, G. C.; VILAR, L. C.; CARVALHO, V. B.; MOREIRA, B. M.; RODRIGUES, K. M.

INSTITUTION: Laboratório de Investigação em Microbiologia Médica (LIMM), Departamento Microbiologia Médica, IMPPG, UFRJ

ABSTRACT

Travel is an important factor for acquisition of colonization by extended-spectrum beta-lactamase (ESBL) producing microorganisms. Some of the risk factors for acquisition of these bacteria are destination region, usage of antimicrobial agents, and occurrence of diarrhea during travel. The aim of this study was to determine the frequency of acquisition of ESBL-producing *Escherichia coli* colonization by travelers attended at Centro de Informações em Saúde para Viajantes (CIVES) of Universidade Federal do Rio de Janeiro. Travelers over 18 years of age attended between 2015 and 2018 were included in the study. Participants answered a questionnaire and were oriented to collect an anal stool specimen with a cotton swab before travel and up to one week after return. Stool samples were sent to our microbiology laboratory and stored into skim-milk, tryptone, glucose and glycerin media (STGG). Twenty microL aliquots were plated onto plain MacConkey agar (MCA) and MCA containing 2 microg/mL ceftriaxone (CRO). Identification of isolates as *E. coli* was performed by MALDI-TOF. Cultures in MCA with CRO were used for ESBL-producing testing. ESBL enzymes were screened by PCR and sequencing. Antimicrobial susceptibility tests (CLSI, 2018), phylogenetic grouping and random amplification of polymorphic DNA (RAPD) were performed for two isolates per participant (one pre and one post-travel). From a total of 153 travelers, 98 (65%) were female. Most isolates belonged to phylogroups A or C, followed by B1 and B2. RAPD typing discriminated 81 profiles, three of them containing two isolates, from the same traveler. Isolates showed high resistance to gentamicin (9%), ampicillin (44%) and cotrimoxazole (38%) after return. Prior to the trip, ESBL-production was observed in 7% (10/153) of the isolates. Among the 143 remaining participants, 29 (20%) returned from the trip with ESBL-producing *E. coli*. All ESBL types isolated were CTX-M: *bla*_{CTX-M15} (18), *bla*_{CTX-M14} (4), *bla*_{CTX-M55} (3), *bla*_{CTX-M2} (2), *bla*_{CTX-M8} (1) e *bla*_{CTX-M27} (1). The highest frequency of acquisition was in the Southeast Asia subcontinent (50%). Analysis of other variables showed that acquisition of colonization by ESBL-producing *E. coli* was associated with tourism travel (p=0.020) and destination area (p=0.003). These data show that travelers departing from Brazil acquire resistant bacteria after international trips with high frequency, similar to that observed in travelers from developed countries.

Keywords: travel medicine, ESBL, *Escherichia coli*, destination

Development Agency: Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) - Finance Code 001 and Fundação de Amparo à Pesquisa do Estado do Rio de Janeiro (FAPERJ).